

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A high purity Nb sputtering target for forming a Nb liner film of an Al interconnection film having a resistivity of $4\ \mu\Omega\text{cm}$ or less, the high purity Nb sputtering target containing an amount of Ta and an amount of oxygen as impurities dispersed therein, the amount of Ta in the target being in a range of 550 to 3000 ppm, the amount of oxygen in the target being in a range of 10 to 200 ppm, wherein a dispersion of the Ta content in the target is within 30% , and a dispersion of the oxygen content in the target is within 80%, the dispersion of the Ta content and the dispersion of the oxygen content being respectively defined by the following equation, for respective measured content values of 9 specimens sampled at respective predetermined positions in the target:

$$\text{dispersion (\%)} = \{(\text{maximum value} - \text{minimum value}) / (\text{maximum value} + \text{minimum value})\} \times 100$$

wherein an average grain diameter of Nb grains in the high purity Nb sputtering target is ~~[[100]]~~ 75 μm or less, each grain of the Nb grains has a grain diameter in ~~[[the]]~~ a range of 0.1 to 10 times ~~[[an]]~~ the average grain diameter, and a grain size ratio of adjacent grains in the Nb grains is in ~~[[the]]~~ a range of ~~0.1 to 10~~ 0.5 to 5,

wherein the high purity Nb target is formed by melting due to multiple times of EB melting so as to reduce the Ta content and oxygen content and the dispersion in a Nb ingot and by plastic working the Nb ingot ~~[[with]]~~ at a working rate in a range of 50 to 98% and by heat-treating the plastic worked Nb ingot at a temperature in a range of 800 to 1300°C for one hour or more, and

wherein the sputtering target is diffusion bonded with a backing plate made of Al or an Al alloy by hot-pressing at a temperature in a range of 400 to 600°C.

2. (Cancelled).

3. (Currently amended) The sputtering target as set forth in claim 1~~[[:]~~, wherein the Ta content is in a range of 550 to 1000 ppm.

4.-9. (Cancelled).

10. (Currently amended) The sputtering target as set forth in claim 1,
~~wherein the grain size ratio of adjacent grains is in the range of 0.5 to 5, and a~~
dispersion of the grain size ratio of the adjacent grains is within 30% the dispersion being
defined by the following equation, for respective measured values of 9 specimens ~~samples~~
sampled at respective predetermined positions in the target:

dispersion (%) = {(maximum value - minimum value) / (maximum value +
minimum value)} X 100.

11.-19. (Cancelled).

20. (Currently amended) The sputtering target as set forth in claim 1 ~~[[10]]~~;
wherein the oxygen content is in the range of 10 to 100 ppm.

21.-26. (Cancelled).

27. (Currently amended) A high purity Nb sputtering target consisting essentially
of Nb for forming a Nb liner film of an Al interconnection film in applying dual damascene
interconnection technology, the sputtering target being diffusion bonded with a backing plate
made of Al or an Al alloy by hot-pressing at a temperature in a range of 400 to 600°C,
wherein the high purity Nb target has a recrystallized structure formed by plastic working a
high purity Nb ingot at a working rate of 55 to 95% to form a high purity Nb plate and by
heat-treating ~~[[a]]~~ the high purity Nb plate at a temperature of 800 to 1300°C for one hour or
more, in which an average grain diameter of Nb grains is ~~[[100]]~~ 75 μm or less, each grain of
the Nb grains has a grain diameter in ~~[[the]]~~ a range of 0.1 to 10 times ~~[[an]]~~ the average
diameter, and a grain size ratio of adjacent grains in the Nb grains is in ~~[[the]]~~ a range of ~~0.1~~
~~to 10~~ 0.5 to 5, wherein a resistivity of the Al interconnection film is 4 μΩcm or less.

28. (Cancelled).

29. (Currently amended) An Al interconnection ~~[[film]]~~ having a dual damascene
structure, comprising:

a Nb liner film formed by sputtering [[a]] the high purity Nb sputtering target of claim 1; and

an Al interconnection film formed on the Nb liner film, wherein the Al interconnection film is composed of Al or Al alloy, and a resistivity of the Al interconnection film is $4\ \mu\Omega\text{cm}$ or less.

30. (New) The Al interconnection as set forth in claim 29,
wherein the Nb liner film is formed within a trench provided in a dielectric film.

31. (New) The Al interconnection as set forth in claim 30,
wherein the Nb liner film is formed along an inner wall of the trench.

32. (New) A method for manufacturing an Al interconnection having a dual damascene structure, comprising:
forming a Nb liner film by sputtering the high purity Nb sputtering target of claim 1; and
forming an Al interconnection film on the Nb liner film, wherein the Al interconnection film is composed of Al or Al alloy, and a resistivity of the Al interconnection film is $4\ \mu\Omega\text{cm}$ or less

33. (New) The manufacturing method as set forth in claim 32,
wherein the Nb liner film is formed within a trench provided in a dielectric film.

34. (New) The manufacturing method as set forth in claim 32,
wherein the Nb liner film is formed along an inner wall of the trench.